

REMARKS

Applicants have carefully considered the August 24, 2005 Office Action, and the amendments above together with the comments that follow are presented in a bona fide effort to address all issues raised in that Action and thereby place this case in condition for allowance. Claims 1-3, 6 and 8-18 were pending in this application. Claims 8 through 17 stand withdrawn from consideration pursuant to the provisions of 37 C.F.R. §1.142(b).

In response to the Office Action dated August 24, 2005 claims 1, 2 and 18 have been amended and claim 3 has been canceled. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification. Applicants submit that the present Amendment does not generate any new matter issue. Entry of the present Amendment is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Claims 1, 2, 3, 6 and 18 were rejected under 35 U.S.C. § 102(b) predicated upon Okabe et al. (JP 62-252139, hereinafter “Okabe”). The Examiner, at pages 2-3 of the Office action, stated that Okabe (Figure 2(E)) teaches all of the limitations of claims 1, 2, 3, 6 and 18. As for the trench being substantially filled with an insulator, the Examiner asserted that Okabe discloses, at page 3, third paragraph of the English translation, that the trench is filled with an insulation part to provide an element separation part. Applicants respectfully traverse the rejection. Moreover, claim 3 has been rejected, therefore, the rejection is moot with respect to this claim.

Applicants would stress that the factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having

ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 66 USPQ2d 1801 (Fed. Cir. 2003); *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). There are significant differences between the claimed invention and the device disclosed by Okabe that would preclude the factual determination that Okabe identically describes the claimed inventions within the meaning of 35 U.S.C. § 102.

The present claimed subject matter relates to a semiconductor device having an element isolation trench. An object of the present claimed subject matter is to provide a semiconductor device capable of preventing defective embedding of an insulator in the element isolation trench and improving the withstand voltage (dielectric strength) of an element isolation region. See page 3, lines 1-5 of the specification.

Independent claim 1, as amended describes a semiconductor device comprising an element isolation trench that is formed on the main surface of the semiconductor substrate. The element isolation trench is substantially filled with an insulator. As shown in FIG. 9, the trench width of an upper end of the element isolation trench is larger than the trench width of a bottom surface, while the length of a side surface located between the upper end and an end of the bottom surface is larger than the length of a straight line connecting the upper end and the end of the bottom surface. The side surface of the element isolation trench includes a first side surface located in the vicinity of the upper end of the element isolation trench and is formed to be substantially perpendicular to and extending downwardly from the main surface of the semiconductor substrate, as shown in FIG. 9. A second side surface is located in the vicinity of the bottom surface of the element isolation trench and is formed to be substantially perpendicular to the main surface of the semiconductor substrate. A substantially single, straight and linearly inclined third side surface directly connects the first side surface and the second side surface with each other.

Independent claim 2 has been recast in independent form. Claim 2 is identical to claim 1, but for the following distinctions: a substantially inclined third side surface directly connecting the first side surface and the second side surface with each other, wherein the section of at least a central portion of the side surface of the element isolation trench exhibits a substantially curvilinear S shape having an angle of inclination gradually steepened toward a downward direction perpendicular to said main surface of said semiconductor substrate.

Independent claim 18 describes a semiconductor device comprising an element isolation trench 11 formed on the main surface of a semiconductor substrate 10, as shown in FIG. 1. The element isolation trench 11 is substantially filled with an insulator 12. The trench width of an upper end of the element isolation trench 11 is larger than the trench width of a bottom surface. The trench comprises a first side surface 11a located in the vicinity of the upper end of the element isolation trench 11 and is formed to be substantially perpendicular to and extending downwardly from the main surface of the semiconductor substrate 10. A second side surface 11c is located in the vicinity of the bottom surface of the element isolation trench 11 and is formed to be substantially perpendicular to the main surface of the semiconductor substrate 10. A third side surface, directly connecting the first side surface and the second side surface with each other, which is substantially single, straight and linearly inclined with respect to the main surface or exhibits a substantially curvilinear S shape having an angle of inclination gradually steepened toward a downward direction perpendicular to the main surface of the semiconductor substrate.

Okabe, at FIG. 2, fails to disclose the structure of claim 1 wherein the third surface is substantially single, straight and linearly inclined and directly connecting the first side surface and the second side surface with each other. Rather, Okabe discloses a third surface with gaps 27 and bowlings 29 as clearly depicted at FIG. 2(E), which cannot be considered substantially single, straight and linearly inclined.

Okabe fails to disclose the structure of claim 2 having a substantially inclined third side surface directly connects the first side surface and the second side surface with each other, wherein the section of at least a central portion of the side surface of the element isolation trench exhibits a substantially curvilinear S shape. Rather, Okabe discloses a third surface with gaps 27 and bowlings 29 as clearly depicted at FIG. 2(E), which cannot be considered being substantially curvilinear S shape.

Okabe fails to disclose the structure of claim 18 for substantially the same reasons as claims 1 and 2 discussed above. Claim 18 requires a third side surface, directly connecting the first side surface and the second side surface with each other, which is either substantially single, straight and linearly inclined with respect to the main surface or exhibits a substantially curvilinear S shape. As discussed above, Okabe fails to disclose or fairly suggest either of the above described structures.

The above argued differences between the claimed inventions undermines the factual determination that Okabe discloses the semiconductor devices identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 U.S.P.Q. 86 (Fed. Cir. 1986). Applicants, therefore, submit that the imposed rejection of claims 1-2, 6 and 18 under 35 U.S.C. § 102 for lack of novelty as evidenced by Okabe is not factually viable and, hence, solicit withdrawal thereof.

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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